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EXAMINER

AGGARWAL, YOGESH K

ART UNIT	PAPER NUMBER
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2615

DATE MAILED: 08/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/834,431

Applicant(s)

MABUCHI ET AL.

Examiner

Yogesh K Aggarwal

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-10, 12, 13 is/are rejected.
- 7) ☒ Claim(s) 4 and 11 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Drawings

1. Figure 9 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 6-10, 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Tanaka et al. (US Patent # 6,130,420).

[Claim 1]

A solid-state image pickup apparatus (figure 1), comprising: an XY address type solid-state image pickup element (figure 1, element 11) in which pixels are arranged in a matrix and color filters having a predetermined color coding are formed for the respective pixels (col. 5 lines 61-

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64); frequency changing means (figure 1, elements 23 and 24) for changing a clock frequency of a system when thinning-out read is specified for the solid-state image pickup element (col. 6 lines 25-31); and driving means (figure 1, element 21) for selecting the pixels on the basis of the clock frequency changed by the frequency changing means and in a sequence corresponding to the color coding to read out pixel signals (col. 5 lines 61-67 clearly disclose that in the "thinned out mode" a solid state color CCD can read out three lines at a time and four lines apart or four lines at a time and two lines apart etc. depending upon the color coding of color filters in use. Furthermore, Col. 6 lines 25-31 disclose that the frequency can be reduced by the dividing circuit 23 to $1/m$ in the "thinned out mode". In the thinned out mode the CCD can be read out three lines at a time and four lines apart or four lines at a time and two lines apart etc. depending upon the color coding of color filters in use as explained earlier, therefore frequency is changed by the frequency changing means 23 and 24 in a sequence corresponding to the color coding of the color filters in use to read out pixel signals).

[Claim 2]

The solid-state image pickup apparatus as recited in claim 1, wherein: the color-coding is repetition of a unit, the unit being made of two rows and two columns (col. 5 lines 65-67 disclose two lines at a time and one line apart, so a unit is made of two rows and two columns); and the driving means successively reads out the pixel signals every third pixel in both a row direction and a column direction (col. 5 lines 65-66 discloses that any of the charge thinning arrangement is made available by simply modifying the wiring pattern of the transfer clocks V2 and V3, so if the charges are read one line, two lines apart then every third pixel will be read out).

[Claim 3]

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The solid-state image pickup apparatus as recited in claim 1, wherein: the color-coding is repetition of a unit, the unit being made of two rows and two columns (col. 5 lines 65-67 disclose two lines at a time and one line apart, so a unit is made of two rows and two columns); and the driving means successively reads out the pixel signals every other unit (col. 5 lines 65-67 disclose that the unit is being read out as every two lines at a time in the row as well column direction), the unit being made of two rows and two columns, in both a row direction and column direction (Figure 4).

[Claim 6]

A solid-state image pickup apparatus (figure 1), comprising: an XY address type solid-state image pickup element (figure 1, element 11) in which pixels are arranged in a matrix and color filters having a predetermined color coding are formed for the respective pixels (col. 5 lines 61-64); and driving means (figure 1, element 21) for selecting only specific pixels to keep an arrangement sequence of the color coding and for reading out pixel signals when thinning-out read is specified for the solid-state image pickup element (col. 5 lines 61-67 clearly disclose that in the "thinned out mode" a solid state color CCD can read out three lines at a time and four lines apart or four lines at a time and two lines apart etc. depending upon the color coding of color filters in use. Furthermore, Col. 6 lines 25-31 disclose that the frequency can be reduced by the dividing circuit 23 to $1/m$ in the "thinned out mode", In the thinned out mode the CCD can be read out three lines at a time and four lines apart or four lines at a time and two lines apart etc. depending upon the color coding of color filters in use as explained earlier, therefore frequency is changed by the frequency changing means in a sequence corresponding to the color coding of the color filters in use to read out pixel signals).

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[Claim 7]

A solid-state image pickup apparatus, comprising: an XY address type solid-state image pickup element (figure 1, element 11) in which pixels are arranged in a matrix and color filters having a predetermined color coding are formed for the respective pixels (col. 5 lines 61-64); and driving means (figure 1, element 21) for performing readout by selecting a plurality of pixels in which at least one pixel is not adjacent to the other pixels and adding a pixel signal corresponding to each of the plurality of pixels (col. 5 lines 61-67 clearly disclose that in the “thinned out mode” a solid state color CCD can read out three lines at a time and four lines apart (at least one pixel not adjacent). (In figure 6 of the applicant’s specification two lines are skipped and are then added together in the new pattern because the same color code is used in a Bayer pattern, therefore when two lines are read with one-line apart (col. 5 lines 65-67), they will be added to form a new color-coding).

[Claims 8-10]

These are method claims corresponding to apparatus claims 1-3 respectively. Therefore they have been analyzed and rejected based upon apparatus claims 1-3.

[Claim 13]

A camera system (col. 9 lines 1-3), comprising: an XY address type solid-state image pickup element (figure 1, element 11) in which pixels are arranged in a matrix and color filters having a predetermined color coding are formed for the respective pixels (col. 5 lines 61-64); operation mode setting means for selectively setting an all-pixel read mode and a thinning-out read mode to the solid-state image pickup element (col. 4 lines 51-58); frequency changing means (figure 1, elements 23 and 24) for changing a clock frequency of a system when the thinning-out read

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mode is set (col. 6 lines 25-31); driving means (figure 1, element 21) for reading out pixel signals by selecting the pixels on the basis of the clock frequency changed by the frequency changing means and in a sequence corresponding to the color coding when the thinning-out read mode is set (col. 5 lines 61-67 clearly disclose that in the "thinned out mode" a solid state color CCD can read out three lines at a time and four lines apart or four lines at a time and two lines apart etc. depending upon the color coding of color filters in use. Furthermore, Col. 6 lines 25-31 disclose that the frequency can be reduced by the dividing circuit 23 to 1/m in the "thinned out mode". In the thinned out mode the CCD can be read out three lines at a time and four lines apart or four lines at a time and two lines apart etc. depending upon the color coding of color filters in use as explained earlier, therefore frequency is changed by the frequency changing means in a sequence corresponding to the color coding of the color filters in use to read out pixel signals); and signal processing means (figure 7, element 106) for processing an output signal of the solid-state image pickup element on the basis of the clock frequency changed by the frequency changing means when the thinning-out read mode is set (col. 7 lines 35-40).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (US Patent # 6,130,420) in view of Acharya et al. (US Patent # 6,348,929).

[Claim 5]

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Tanaka et al. fails to disclose “wherein the color coding has a same color in a same column and has repetition of three colors in a row direction, and the driving means reads out the pixel signals every other pixel in both a row direction and a column direction”. However Acharya et al. teaches in figure 3 (a) color filter array (CFA) having same color in same column and repetition of three colors in a row direction and the driving means reads out the pixel signals every other pixel in both a row direction and a column direction (col. 7 lines 17-25) in order to have the same color pattern in the readout color filter array (CFA) like a Bayer pattern. Therefore taking the combined teachings of Tanaka and Acharya, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have color coding having a same color in a same column and has repetition of three colors in a row direction, and the driving means reads out the pixel signals every other pixel in both a row direction and a column direction. The benefit of doing so would be to have a clear image with better colors.

[Claim 12]

This is a method claim corresponding to apparatus claim 5. Therefore it has been analyzed and rejected based upon apparatus claim 5.

Conclusion

Allowable Subject Matter

6. Claims 4 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

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a) The prior art fails to show or suggest wherein four, 2, units, each unit being made of two rows and two columns, are integrated, and the driving means successively reads out an addition signal of lower left pixels in the units, an addition signal of lower right pixels, an addition signal of upper left pixels, and an addition signal of upper right pixels

b) Claim 11 is a method claim corresponding to apparatus claim 4.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K Aggarwal whose telephone number is (703) 305-0346. The examiner can normally be reached on M-F 9:00AM-5:30PM.

8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on (703) 308-9644. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YKA
August 10, 2004


TUAN HO
PRIMARY EXAMINER